

This listing of claims will replace all prior versions, and listings, of claims in the application:

**We claim:**

**Claims 1.–53. (Cancelled)**

**Claim 54. (Currently Amended)** A process for the production of ergosterol or an intermediate product thereof which is squalene, farnesol, geraniol, lanosterol, zymosterol, 4,4-dimethylzymosterol, 4-methylzymosterol, ergost-7-enol or ergosta-5,7-dienol or a sterol with a 5,7-diene structure, comprising fermenting into ergosterol with a plasmid vector-transformed yeast, wherein said vector comprises suitable *S. cerevisiae* yeast genes of the ergosterol metabolic process ~~in altered form~~, wherein the catalytic area of yeast HMG is expressed without its membrane-bonded domain; and the natural promoter of yeast t-HMG, yeast ERG9 and yeast SAT1 gene is replaced by the middle part of yeast ADH1 promoter, the *S. cerevisiae* suitable yeast genes being

a-i)

- i) a gene of the HMG-Co-A-reductase (t-HMG),
- ii) a gene of the squalene synthetase (ERG9),
- iii) a gene of the acyl-CoA: sterol-acyltransferase (SAT1), and
- iv) a gene of squalene epoxidase (ERG1),

or

a-ii)

- i) a gene of HMG-Co-A-reductase (t-HMG), and
- ii) a gene of the squalene synthetase (ERG9),

or

a-iii)

- i) a gene of the HMG-Co-A-reductase (t-HMG), and
- ii) a gene of the acyl-CoA: sterol-acyltransferase (SAT1),

or

a-iv)

- i) a gene of the HMG-Co-A-reductase (t-HMG), and
- ii) a gene of squalene epoxidase (ERG1),

or

a-v)

- i) a gene of squalene synthetase (ERG9), and
- ii) a gene of acyl-CoA: sterol-acyltransferase (SAT1)

or

a-vi)

i) a gene of squalene synthetase (ERG9), and

ii) a gene of squalene epoxidase (ERG1),

or

a-vii)

i) a gene of acyl-coA: sterol-acyltransferase (SAT1) and

ii) a gene of squalene epoxidase (ERG1),

or

a-viii) at least one of the genes of a-i),

and

analyzing, purifying and isolating the fermented product.

**Claim 55. (Previously Presented)** A process according to claim 82, further comprising a gene of squalene epoxidase (*ERG1*) in a-ii), a-iii), and a-v), and a gene of acyl-CoA: sterol-acyl-transferase in a-ii).

**Claim 56. (Previously Presented)** A process according to claim 82, wherein the genes in a-i) to a-vii) are introduced, in each case independently of one another, into the same species of said yeast.

**Claim 57.-60. (Cancelled)**

**Claim 61. (Previously Presented)** A process according to claim 82, wherein said yeast is *S. cerevisiae*.

**Claim 62. (Previously Presented)** A process according to claim 61, wherein said yeast is *S. cerevisiae* AH22.

**Claim 63. (Currently Amended)** Yeast strain *S. cerevisiae* AH22, comprising ~~one or more of the~~ transforming said yeast strain with the following yeast genes

~~a-i)~~

i) a gene of the HMG-Co-A-reductase (t-HMG), and

ii) ~~a gene of the squalene synthetase (ERG9),~~

~~iii)~~ ii) a gene of the acyl-CoA; sterol-acyltransferase (SAT1), and

iv) wherein said yeast may optionally also comprise a gene of squalene epoxidase (ERG1) or a

gene of the squalene synthetase (ERG9).

**Claim 64-67. (Cancelled)**

**Claim 68. (Previously Presented)** An expression cassette that comprises the average yeast *ADH* promoter, the yeast *t-HMG* gene, the yeast *TRP* terminator and the yeast *SAT1* gene with the average yeast *ADH* promoter and the yeast *TRP* terminator.

**Claim 69. (Currently Amended)** An expression cassette comprising the average yeast *ADH* promoter, the yeast *t-HMG* gene, the yeast *TRP* terminator, the yeast *SAT1* gene with the average yeast *ADH* promoter, and the yeast *TRP* terminator, and the yeast *ERG9* gene with the average yeast *ADH* promoter and the yeast *TRP* terminator.

**Claim 70. (Previously Presented)** A combination of expression cassettes comprising

- a) a first expression cassette comprising the yeast *ADH* promoter, the yeast *t-HMG* gene and the yeast *TRP* terminator,
- b) a second expression cassette comprising the yeast *ADH* promoter, the yeast *SAT1* gene and the *TRP* terminator,

and

- c) a third expression cassette comprising the yeast *ADH* promoter, the yeast *ERG9* gene and the *TRP* terminator.

**Claim 71-72. (Cancelled)**

**Claim 73. (Previously Presented)** A microorganism comprising an expression cassette according to claim 68.

**Claim 74. (Previously Presented)** A microorganism according to claim 73, which is yeast.

**Claim 75.-76 (Cancelled)**

**Claim 77. (Currently Amended)** A process according to claim 55, wherein the genes are introduced, in each case independently of one another, into the same species of said yeast.

**Claim 78. (Previously Presented)** A microorganism comprising an expression cassette according to claim 69.

**Claim 79. (Previously Presented)** A microorganism comprising a combination according to claim 70.

**Claim 80. (Previously Presented)** A microorganism according to claim 78, which is yeast.

**Claim 81. (Previously Presented)** A microorganism according to claim 79, which is yeast.

**Claim 82. (Currently Amended)** A process for the production of ergosterol or an intermediate product thereof which is squalene, farnesol, geraniol, lanosterol, zymosterol, 4,4-dimethylzymosterol, 4-methylzymosterol, ergost-7-enol or ergosta-5,7-dienol or a sterol with a 5,7-diene structure, comprising fermenting into ergosterol with a plasmid vector-transformed yeast, wherein said vector comprises suitable genes of the ergosterol metabolic process ~~in altered form~~, wherein the catalytic area of HMG-CoA reductase (HMG1) is expressed without its membrane-bonded domain; and the natural promoter of altered variant of HMG-1 (t-HMG), squalene synthetase (ERG9) and sterol-acyl transferase (SAT1) gene is replaced by the middle part of ADH1 promoter, the suitable genes being

a-i)

- i) a gene of the HMG-Co-A-reductase (t-HMG),
- ii) a gene of the squalene synthetase (ERG9),
- iii) a gene of the acyl-CoA; sterol-acyltransferase (SAT1), and
- iv) a gene of squalene epoxidase (ERG1),

or

a-ii)

- i) a gene of HMG-Co-A-reductase (t-HMG), and
- ii) a gene of the squalene synthetase (ERG9),

or

a-iii)

- i) a gene of the HMG-Co-A-reductase (t-HMG), and
- ii) a gene of the acyl-CoA: sterol-acyltransferase (SAT1),

or

a-iv)

- i) a gene of the HMG-Co-A-reductase (t-HMG), and
- ii) a gene of squalene epoxidase (ERG1),

or

a-v)

- i) a gene of squalene synthetase (ERG9), and
- ii) a gene of acyl-CoA: sterol-acyltransferase (SAT1)

or

a-vi)

- i) a gene of squalene synthetase (ERG9), and
- ii) a gene of squalene epoxidase (ERG1),

or

a-vii)

- i) a gene of acyl-coA: sterol-acyltransferase (SAT1) and
- ii) a gene of squalene epoxidase (ERG1),

or

a-viii) at least one of the genes of a-i),

and

analyzing, purifying and isolating the fermented product.

**Claim 83. (Previously Presented)** The process according to claim 82, wherein said suitable genes of the ergosterol metabolic process are yeast genes.